The Public Policy Research Lab

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Louisiana's Uninsured Population:

Regional and Parish-level Estimates

Fourth Quarter 2008 Update

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Overview: This report summarizes regional and parish-level estimates of uninsured children and adults. Estimates are based on data from the 2007 Louisiana Health Insurance Survey, historical data from prior Louisiana Health Insurance Surveys, and the most recent parish-level population, economic, and Medicaid/LaCHIP enrollment data available. In this report, we utilize a *blended* approach that makes use of survey data collected in 2007 and parish-level characteristics to develop estimates of uninsured populations. Specifically, we model uninsured rates as a function of parish level unemployment, Medicaid/LaCHIP enrollments, the percent of children on free and reduced lunch (as an indicator of poverty), and household income. The blended approach is described more fully in Appendix A, as well as the complete specification of the model.

The results presented in this report reflect the best possible estimates of parish-level uninsured populations during the fourth quarter of 2008. Before we present the findings, a caveat is in order. The parish-level data used to generate the uninsured estimates are the most recent available. Even so, there is often a lag in the data used to generate the estimates and the period under consideration. For example, the most recent data on income at the parish level from the IRS is 2006. Because the measure was used in earlier estimates (from the first quarter 2008), our estimates of uninsured children may appear more stable than they really are.

Table 1: Source of Data and Time Period Covered

Description	**Period**
2007 Louisiana Health Insurance Survey	2007
LA Workforce Commission Unemployment Data	November 2008 (Preliminary)
LA-DHH Medicaid/LACHIP Enrollment	November 2008
LA-DOE Free & Reduced School Lunch	November 2008
U.S. Census Estimates by Parish	July 2007
IRS Income Data	2006

Regional Estimates: In Tables 2 & 3, we present the regional estimates for uninsured children under 19 (u19) and uninsured non-elderly adults (19-64). The numbers for children remain consistent throughout the quarterly forecasts. For example, the statewide uninsured rate for children has moved down slightly and steadily from 5.6% in 2007 to 5.4% in 2008:Q4. This 0.2% decline since 2007 represents a reduction of 2,000 statewide from approximately 64,000 to 62,000 uninsured children. An increase of 18,804 kids insured by Medicaid/LaCHIP more than offset an increase in the unemployment rate in our model for uninsured children.

The statewide uninsured rate for adults, in contrast, has increased by 1.1% from 20.8% to 21.9% between 2007 and 2008:Q4. The percent of uninsured adults increases in each of the regions, most notably in the northeast where the percent of uninsured adults increased by 2.8% points in 2008. This is underscored by increasing unemployment throughout the state and above average unemployment in the Northeast (Region 8), respectively. These effects can also be seen in increased Medicaid enrollment by adults.

Table 2: Blended Estimates of the Percent and Number of Uninsured Children (Under 19) at the Regional Level

	KIDS (%)					KIDS (Count)				
Region	**2007 Estimate**	**2008Q1 Forecast**	**2008Q2 Forecast**	**2008Q3 Forecast**	**2008Q4 Forecast**	**2007 Estimate**	**2008Q1 Forecast**	**2008Q2 Forecast**	**2008Q3 Forecast**	**2008Q4 Forecast**
1: New Orleans	9.0%	9.1%	8.9%	8.8%	8.7%	15,845	16,159	14,776	14,640	14,434
2: Baton Rouge	4.3%	4.7%	4.7%	4.7%	4.7%	8,134	8,168	8,233	8,238	8,223
3: Houma-Thibodeaux	4.1%	4.2%	4.1%	4.2%	4.2%	4,635	4,569	4,523	4,534	4,566
4: Acadiana	5.2%	5.5%	5.4%	5.3%	5.3%	8,800	8,755	8,667	8,592	8,525
5: Southwest	5.8%	5.8%	5.7%	5.7%	5.7%	4,384	4,368	4,327	4,327	4,322
6: Central	4.6%	4.6%	4.6%	4.5%	4.5%	3,803	3,787	3,730	3,712	3,675
7: Northwest	4.6%	4.7%	4.7%	4.7%	4.6%	6,777	6,778	6,721	6,703	6,617
8: Northeast	5.0%	4.9%	4.8%	4.8%	4.8%	4,740	4,682	4,540	4,513	4,502
9: Northshore	4.7%	5.3%	5.2%	5.2%	5.3%	7,233	7,226	7,418	7,365	7,465
Statewide	**5.6%**	**5.6%**	**5.6%**	**5.5%**	**5.4%**	**64,351**	**64,491**	**62,924**	**62,624**	**62,329**

Table 3: Blended Estimates of the Percent and Number of Uninsured Adults at the Regional Level

	ADULTS (%)					ADULTS (Count)				
Region	**2007 Estimate**	**2008Q1 Forecast**	**2008Q2 Forecast**	**2008Q3 Forecast**	**2008Q4 Forecast**	**2007 Estimate**	**2008Q1 Forecast**	**2008Q2 Forecast**	**2008Q3 Forecast**	**2008Q4 Forecast**
1: New Orleans	21.2%	21.5%	21.7%	22.1%	22.1%	89,962	92,379	96,857	98,331	98,252
2: Baton Rouge	17.3%	16.9%	17.2%	17.6%	17.7%	66,977	67,848	69,067	70,465	70,903
3: Houma-Thibodeaux	19.6%	19.3%	19.5%	19.9%	20.1%	47,042	46,931	47,624	48,406	48,861
4: Acadiana	19.7%	19.4%	19.7%	20.0%	20.1%	66,504	67,216	68,049	69,252	69,606
5: Southwest	27.8%	27.2%	27.4%	27.7%	27.8%	46,702	46,803	47,265	47,774	47,922
6: Central	21.1%	21.3%	21.7%	22.2%	22.2%	37,541	37,812	38,509	39,361	39,500
7: Northwest	23.8%	25.0%	25.3%	25.8%	25.8%	78,641	79,272	80,150	81,479	81,616
8: Northeast	23.6%	25.1%	25.6%	26.2%	26.4%	51,324	51,563	52,677	53,963	54,374
9: Northshore	20.7%	19.5%	19.7%	20.0%	20.3%	61,651	62,326	62,140	63,077	63,977
Statewide	**20.8%**	**21.0%**	**21.4%**	**21.8%**	**21.9%**	**546,344**	**552,150**	**562,338**	**572,109**	**575,011**

Parish-Level Estimates: The parish-level estimates for children and adults are presented in Tables 4 and 5. For the most part, the results are consistent with the March 2008 quarterly report; however, there are a few notable exceptions:

- The percent of uninsured children in Orleans and St. Bernard parishes have declined by 1 and 3.1 percentage points respectively. This reflects the fact that Medicaid/LaCHIP enrollments are increasing faster than the population in these parishes. We should note that our population estimates are based on July 2007 data and lag our Medicaid/LaCHIP enrollment data.
- The percent of uninsured adults has increased 3.3 percentage points in Richland parish due to a large increase in unemployment since the survey last year. Unemployment in Richland parish has increased from 4% in 2007 to 7% in 2008Q4. Medicaid enrollments for adults ages 19 through 64 have also increased since 2007 from approximately 1,200 to 1,900 in 2008:Q4.

Table 4: Blended Estimates of the Percent and Number of Uninsured Children at the Parish-Level

GEOGRAPHY		KIDS (%)					KIDS (count)				
Parish	DHH Region	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast
Jefferson	1	8.9%	8.9%	9.0%	9.0%	9.0%	9,742	9,561	9,440	9,480	9,453
Orleans	1	9.5%	9.6%	8.9%	8.6%	8.3%	5,253	5,668	4,543	4,403	4,268
Plaquemines	1	6.9%	7.0%	7.2%	7.5%	7.8%	454	442	429	442	461
St. Bernard	1	11.0%	10.7%	8.9%	7.9%	6.3%	395	487	354	316	251
Ascension	2	6.8%	6.7%	6.4%	6.2%	6.0%	1,894	1,881	1,913	1,828	1,794
East Baton Rouge	2	4.2%	4.1%	4.2%	4.3%	4.3%	4,913	4,925	4,985	5,059	5,087
East Feliciana	2	2.6%	2.8%	3.0%	3.2%	3.3%	134	142	150	162	166
Iberville	2	3.1%	3.2%	3.4%	3.5%	3.6%	264	274	278	291	298
Pointe Coupee	2	7.9%	8.3%	7.8%	7.6%	7.3%	465	483	440	429	412
West Baton Rouge	2	5.9%	5.9%	5.9%	6.0%	6.0%	355	357	362	364	365
West Feliciana	2	4.0%	4.0%	4.0%	4.1%	3.9%	109	106	103	105	101
Assumption	3	7.8%	7.5%	6.8%	6.3%	6.5%	476	447	398	373	380
Lafourche	3	3.3%	3.3%	3.3%	3.4%	3.5%	799	795	798	811	836
St. Charles	3	3.1%	3.1%	3.2%	3.2%	3.3%	457	450	463	468	479
St. James	3	7.4%	7.3%	6.9%	6.7%	6.6%	452	443	406	395	391
St. John The Baptist	3	8.4%	8.2%	8.1%	8.0%	7.9%	1,210	1158	1,168	1151	1,148
St. Mary	3	4.6%	4.6%	4.4%	4.4%	4.5%	677	661	628	621	630
Terrebonne	3	1.8%	2.0%	2.2%	2.4%	2.3%	565	614	662	714	702
Acadia	4	6.9%	6.8%	6.6%	6.4%	6.1%	1218	1181	1,141	1106	1,062
Evangeline	4	5.9%	6.0%	5.9%	5.9%	5.9%	615	618	610	611	611
Iberia	4	3.0%	3.1%	3.2%	3.2%	3.2%	655	664	679	697	689
Lafayette	4	5.1%	5.0%	5.1%	5.1%	5.2%	2804	2815	2,843	2857	2,911
St. Landry	4	5.7%	5.7%	5.7%	5.7%	5.5%	1502	1498	1,488	1483	1,432
St. Martin	4	7.0%	7.0%	6.7%	6.4%	6.1%	990	992	956	918	875
Vermilion	4	6.7%	6.6%	6.4%	6.2%	6.3%	1,016	988	949	921	945
Allen	5	4.2%	4.4%	4.5%	4.6%	4.5%	261	277	277	284	275
Beauregard	5	5.7%	5.8%	5.8%	5.8%	5.8%	521	521	529	531	528
Calcasieu	5	5.7%	5.7%	5.7%	5.7%	5.7%	2845	2832	2,822	2820	2,823

GEOGRAPHY		KIDS (%)					KIDS (count)				
Parish	DHH Region	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast
Cameron	5	7.8%	7.7%	7.4%	7.4%	8.6%	155	144	122	122	142
Jefferson Davis	5	6.8%	6.8%	6.6%	6.5%	6.3%	602	594	577	570	553
Avoyelles	6	3.8%	3.8%	4.0%	4.0%	4.0%	427	423	441	447	450
Catahoula	6	3.6%	3.7%	3.7%	3.7%	3.6%	95	98	96	96	93
Concordia	6	5.9%	5.7%	5.3%	5.0%	4.8%	301	286	261	249	237
Grant	6	2.3%	2.6%	2.9%	3.0%	3.0%	121	137	152	158	157
La Salle	6	1.9%	2.1%	2.3%	2.4%	2.2%	66	73	80	86	79
Rapides	6	5.0%	4.9%	4.9%	4.8%	4.8%	1744	1726	1,711	1691	1,666
Vernon	6	5.2%	5.2%	5.2%	5.2%	5.2%	832	840	802	805	815
Winn	6	5.7%	5.5%	5.1%	4.9%	4.9%	216	203	186	179	179
Bienville	7	4.5%	4.6%	4.6%	4.7%	4.7%	174	175	173	175	176
Bossier	7	3.3%	3.3%	3.4%	3.5%	3.4%	1002	1021	1,062	1076	1,063
Caddo	7	5.1%	5.1%	5.0%	5.0%	5.0%	3,488	3,442	3,406	3,392	3,356
Claiborne	7	6.5%	6.7%	6.2%	6.0%	5.8%	249	257	226	219	213
De Soto	7	6.4%	6.4%	6.1%	6.0%	5.8%	454	450	432	421	409
Natchitoches	7	6.2%	6.2%	6.2%	6.1%	5.9%	687	705	692	680	661
Red River	7	3.2%	3.2%	3.4%	3.6%	3.7%	85	85	89	94	97
Sabine	7	5.5%	5.5%	5.4%	5.4%	5.5%	346	341	331	329	333
Webster	7	2.9%	3.0%	3.1%	3.2%	3.1%	292	303	309	317	310
Caldwell	8	4.3%	4.2%	4.3%	4.3%	4.1%	110	105	105	105	100
East Carroll	8	8.2%	7.9%	7.3%	7.0%	6.8%	219	202	173	167	161
Franklin	8	1.5%	1.6%	1.7%	1.8%	1.9%	81	85	88	94	102
Jackson	8	2.9%	3.1%	3.3%	3.4%	3.4%	108	117	124	128	128
Lincoln	8	5.5%	5.6%	5.5%	5.5%	5.5%	633	651	642	640	638
Madison	8	7.5%	7.2%	6.7%	6.5%	6.6%	286	267	241	233	239
Morehouse	8	6.6%	6.5%	6.2%	6.1%	5.9%	526	499	463	454	439
Ouachita	8	4.6%	4.6%	4.5%	4.5%	4.5%	1962	1943	1,919	1919	1,915
Richland	8	1.6%	1.7%	1.9%	2.1%	2.1%	87	92	104	112	116
Tensas	8	4.7%	4.9%	4.9%	5.1%	5.2%	75	74	71	74	75

GEOGRAPHY		KIDS (%)					KIDS (count)				
Parish	DHH Region	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast
Union	8	8.0%	8.0%	7.6%	7.4%	7.4%	463	462	442	428	430
West Carroll	8	6.7%	6.7%	6.1%	5.8%	5.8%	190	186	168	159	158
Livingston	9	3.0%	3.1%	3.2%	3.2%	3.4%	947	970	1,041	1058	1,110
St. Helena	9	8.5%	8.4%	8.4%	8.4%	8.4%	241	234	231	232	232
St. Tammany	9	4.2%	4.2%	4.3%	4.3%	4.4%	2,550	2,487	2,609	2,625	2,659
Tangipahoa	9	7.1%	7.1%	7.1%	7.0%	7.0%	2222	2266	2,307	2265	2,291
Washington	9	10.7%	10.7%	10.2%	9.8%	9.8%	1272	1267	1,229	1184	1,173

Table 5: Blended Estimates of the Percent and Number of Uninsured Adults at the Parish-Level

GEOGRAPHY		ADULTS (%)					ADULTS (Count)				
Parish	DHH Region	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast
Jefferson	1	21.1%	21.2%	21.5%	21.8%	21.9%	55,640	54,934	56,052	56,840	57,057
Orleans	1	21.1%	21.3%	21.4%	21.8%	21.8%	28,660	30,986	33,709	34,325	34,309
Plaquemines	1	19.5%	19.9%	20.5%	20.9%	21.6%	2,612	2,543	2,706	2,767	2,851
St. Bernard	1	30.7%	30.9%	31.1%	31.2%	28.6%	3,050	3,916	4,390	4,399	4,035
Ascension	2	15.0%	15.2%	15.3%	15.6%	15.7%	9,257	9,532	9,411	9,599	9,648
East Baton Rouge	2	16.7%	16.8%	17.0%	17.3%	17.4%	44,242	44,581	45,464	46,199	46,476
East Feliciana	2	16.9%	17.4%	18.1%	19.0%	19.3%	2,244	2,301	2,417	2,526	2,566
Iberville	2	20.4%	21.2%	21.8%	22.6%	22.9%	4,225	4,318	4,491	4,656	4,709
Pointe Coupee	2	17.5%	18.4%	19.1%	19.8%	19.8%	2,373	2,461	2,562	2,657	2,663
West Baton Rouge	2	19.5%	19.7%	20.0%	20.5%	20.7%	2,749	2,806	2,834	2,902	2,931
West Feliciana	2	16.4%	16.6%	16.8%	17.1%	17.0%	1,887	1,849	1,888	1,924	1,910
Assumption	3	22.1%	22.3%	22.3%	22.6%	23.0%	3,211	3,182	3,200	3,241	3,301
Lafourche	3	16.3%	16.5%	16.9%	17.2%	17.6%	9,435	9,473	9,719	9,921	10,122
St. Charles	3	14.0%	14.2%	14.5%	15.0%	15.3%	4,610	4,614	4,721	4,861	4,959
St. James	3	23.9%	24.3%	24.3%	24.8%	24.9%	3,099	3,125	3,160	3,217	3,235
St. John The Baptist	3	18.8%	19.1%	19.6%	20.3%	20.5%	5,642	5,623	5,720	5,905	5,988
St. Mary	3	20.3%	20.6%	20.8%	21.2%	21.5%	6,215	6,232	6,351	6,465	6,568
Terrebonne	3	22.2%	22.2%	22.2%	22.2%	22.1%	14,829	14,681	14,753	14,795	14,688
Acadia	4	22.4%	22.5%	225.0%	22.7%	22.5%	7,955	7,904	7,892	7,944	7,892
Evangeline	4	20.9%	21.3%	21.8%	22.4%	22.6%	4,409	4,482	4,600	4,726	4,771
Iberia	4	20.4%	20.7%	21.0%	21.5%	21.4%	9,142	9,207	9,341	9,523	9,508
Lafayette	4	16.6%	16.7%	16.9%	17.2%	17.5%	21,052	21,348	21,645	22,008	22,330
St. Landry	4	20.4%	20.7%	21.2%	21.7%	21.7%	10,813	10,960	11,153	11,440	11,397
St. Martin	4	22.0%	22.3%	22.5%	22.8%	22.7%	6,996	7,148	7,169	7,266	7,219
Vermilion	4	18.3%	18.5%	18.8%	19.1%	19.5%	6,137	6,168	6,248	6,345	6,489
Allen	5	27.6%	28.3%	28.9%	29.5%	29.4%	4,445	4,568	4,679	4,790	4,759
Beauregard	5	25.7%	26.1%	26.4%	26.8%	26.8%	5,573	5,591	5,602	5,694	5,703

GEOGRAPHY		ADULTS (%)					ADULTS (Count)				
Parish	DHH Region	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast
Calcasieu	5	27.1%	27.2%	27.3%	27.5%	27.6%	30,279	30,303	30,543	30,786	30,881
Cameron	5	28.5%	28.4%	28.2%	28.2%	30.5%	1,387	1,318	1,377	1,376	1,486
Jefferson Davis	5	27.5%	27.7%	28.0%	28.4%	28.2%	5,017	5,022	5,063	5,128	5,093
Avoyelles	6	24.4%	24.6%	25.2%	25.9%	26.0%	6,314	6,305	6,423	6,582	6,617
Catahoula	6	29.4%	29.3%	29.0%	29.1%	28.7%	1,875	1,851	1,841	1,845	1,824
Concordia	6	22.9%	23.3%	23.8%	24.5%	24.4%	2,608	2,597	2,645	2,722	2,713
Grant	6	25.8%	26.0%	25.9%	26.0%	25.8%	3,133	3,134	3,091	3,112	3,088
La Salle	6	17.4%	17.8%	18.3%	18.9%	18.7%	1,471	1,500	1,537	1,582	1,566
Rapides	6	18.6%	18.8%	19.3%	19.8%	19.9%	14,492	14,682	14,980	15,383	15,477
Vernon	6	19.7%	20.0%	20.4%	20.8%	21.1%	5,155	5,295	5,523	5,644	5,715
Winn	6	25.4%	25.4%	25.5%	25.8%	25.9%	2,492	2,449	2,469	2,490	2,502
Bienville	7	28.1%	28.5%	28.8%	29.4%	29.7%	2,435	2,424	2,458	2,507	2,536
Bossier	7	18.3%	18.5%	19.0%	19.4%	19.5%	11,884	12,213	12,361	12,678	12,718
Caddo	7	25.2%	25.4%	25.6%	26.0%	26.1%	38,067	38,173	38,551	39,133	39,239
Claiborne	7	29.3%	29.8%	30.1%	30.6%	30.7%	2,832	2,894	2,999	3,049	3,062
De Soto	7	28.6%	29.0%	29.2%	29.6%	29.5%	4,528	4,570	4,576	4,647	4,626
Natchitoches	7	24.8%	25.3%	26.3%	27.0%	27.1%	5,647	5,872	6,147	6,320	6,332
Red River	7	32.5%	32.5%	32.8%	33.3%	33.5%	1,761	1,715	1,723	1,751	1,760
Sabine	7	31.5%	31.2%	30.9%	30.9%	30.9%	4,354	4,274	4,259	4,254	4,255
Webster	7	29.4%	29.7%	29.5%	29.8%	29.5%	7,132	7,138	7,077	7,140	7,086
Caldwell	8	31.5%	31.1%	30.9%	30.8%	30.3%	2,069	1,985	1,968	1,967	1,935
East Carroll	8	35.6%	35.8%	35.8%	36.4%	36.3%	1,752	1,681	1,729	1,759	1,750
Franklin	8	28.2%	28.7%	29.0%	29.7%	30.3%	3,289	3,277	3,335	3,413	3,477
Jackson	8	21.9%	22.5%	23.1%	23.7%	23.9%	1,959	2,006	2,050	2,104	2,124
Lincoln	8	21.1%	21.6%	22.5%	23.4%	23.6%	5,349	5,572	5,829	6,059	6,115
Madison	8	30.6%	31.2%	31.7%	32.6%	32.9%	2,166	2,122	2,176	2,237	2,260
Morehouse	8	25.9%	26.6%	27.3%	28.4%	28.6%	4,479	4,447	4,578	4,750	4,798
Ouachita	8	23.3%	23.4%	23.8%	24.2%	24.4%	20,677	20,810	21,133	21,546	21,671
Richland	8	23.4%	24.0%	25.3%	26.3%	26.7%	2,832	2,892	3,059	3,181	3,227

GEOGRAPHY		ADULTS (%)					ADULTS (Count)				
Parish	DHH Region	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast	2007 Estimate	2008Q1 Forecast	2008Q2 Forecast	2008Q3 Forecast	2008Q4 Forecast
Tensas	8	34.4%	34.6%	34.6%	35.0%	35.1%	1,260	1,214	1,225	1,240	1,244
Union	8	24.6%	25.3%	25.9%	26.7%	27.1%	3,327	3,393	3,450	3,546	3,599
West Carroll	8	31.1%	31.5%	31.4%	31.6%	31.8%	2,165	2,164	2,146	2,161	2,173
Livingston	9	18.6%	18.8%	19.1%	19.4%	19.9%	13,678	14,028	13,922	14,152	14,530
St. Helena	9	29.4%	29.5%	29.7%	30.2%	30.3%	1,921	1,900	1,920	1,955	1,962
St. Tammany	9	13.4%	13.5%	13.8%	14.1%	14.3%	19,295	19,108	19,128	19,609	19,876
Tangipahoa	9	25.2%	25.5%	25.7%	26.1%	26.5%	17,584	18,099	18,070	18,332	18,594
Washington	9	34.5%	34.4%	34.0%	33.9%	33.9%	9,173	9,191	9,047	9,029	9,015

Appendix A
Technical Discussion of the Methodology

The purpose of this section is to describe the methodology used to produce the parish-level estimates. Discussion on small area estimation, sample size, and parish and regional level estimates are included in this section. Small area estimation allows us to obtain estimates of the percent of uninsured citizens on parish-level characteristics. The estimates are based on data collected in the 2007 Louisiana Health Insurance Survey and parish-level data on Medicare enrollments, population characteristics, and economic indicators.

Small Area Estimation
Various methods *of small area estimation* exist, and while each provides insight into the study of health policy, different techniques offer different strengths and weaknesses. The various methods include:

- Direct survey estimation;
- Synthetic estimation; and
- Blended estimation.

The simplest method is *direct survey estimation*, which uses the survey to estimate the proportion of uninsured in each parish. The synthetic estimation method consists of constructing estimates of parish health insurance coverage rates by building a statistical model to predict parish-level insurance coverage rates. In essence, the statistical model takes advantage of the fact that we would expect parishes that are similar in terms of other characteristics (income, Medicaid enrollment, etc.) to have similar insurance coverage rates. Finally, this blended estimation option, called *information borrowing*, allows us to blend the survey estimates with synthetic estimates. The blended estimates place greater weight on the direct survey estimates in parishes where a large sample exists and rely more heavily on synthetic estimates in parishes where the sample size is small. We utilize the blended estimates to take advantage of the large survey observations including in the 2007 Louisiana Health Insurance Survey and to update our expectations based on parish-level characteristics such as unemployment.

Construction of Synthetic Estimates
Our methodology consists of constructing synthetic estimates of parish uninsurance rates similar to:

$$\hat{y}_i^{Synthetic} = \hat{\beta}_0 + \hat{\beta}_1 x_{1i} + \hat{\beta}_2 x_{2i} + \ldots + \hat{\beta}_k x_{ki}$$

Intuitively, the methodology should use the survey estimate y_i^{Direct} when the survey estimate is accurate and $y_i^{Synthetic}$ when the survey standard error is large and y_i^{Direct} is inaccurate. We accomplish this goal by creating a blended estimate:

$$y_i^{Blended} = w_1 y_i^{Direct} + w_2 y_i^{Synthetic}$$

where $w_1 = 1 - \dfrac{SE(Y^{Direct})}{(SE(Y^{Direct}) + SE(Y^{Synthetic}))}$ and

$$w_2 = \frac{SE(Y^{Direct})}{(SE(Y^{Direct}) + SE(Y^{Synthetic}))}.$$ [1]

Equations A.1 and A.2 below provide OLS estimates of parish uninsurance rates for children under 19 and adults 19-64 respectively. For the children's equation, the independent variable is equal to the child's probability of being uninsured. For many children, this is simply zero or one depending on the survey response. But, for

[1] Note that this weighting scheme differs from the pure empirical Bayes used in the 2003 LHIS and tends to place more weight on direct estimates for our sample. We thank Gestur Davidson of SHADAC for suggesting the new weights.

children who are eligible for Medicaid, the bias correction model was used to assign a probability of being on Medicaid based on the individual and family characteristics. The explanatory variables are the percent of working age adults in the house who are unemployed (*PCTUNEMP*), an indicator equal to one if the child lives in a family below 185% of the federal poverty line (*LT185FPL*), household income (*HHINC*), an indicator equal to one if the child is black (*BLACK*), an indicator equal to one if the child is female (*FEMALE*), an indicator equal to one if the child is on Medicaid or LACHIP (MEDICAID), three dummy variables for age (A2-A4), and dummy variables for DHH region (D2-D8). Note that we constrain the coefficients of *LT185FPL* and MEDICAID to sum to zero.

Children under 19:

$$\begin{aligned}\hat{y}_i^{Synthetic} &= .0734 + .023PCTUNEMP + .107LT185FPL + 1.17e\text{-}08HHINC - .009BLACK \\ &- .006FEMALE - .107MEDICAID + .006A2 + .005A3 + .010A4 \\ &- .040D2 - .042D3 - .041D4 - .0204D5 - .044D6 - .037D7 - .032D8 - .034D9\end{aligned} \quad \text{(A.1)}$$

The adults equation deletes the Medicaid indicator, but is otherwise similar with the only exception being that there are more age groups defined to cover the broader range 19-64.

Adults 19-64:

$$\begin{aligned}\hat{y}_i^{Synthetic} &= .162 + .214PCTUNEMP + .220LT185FPL - 6.26e\text{-}08HHINC + .035BLACK \\ &- .014FEMALE + .005A2 - .036A3 - .058A4 - .103A5 \\ &- .041D2 - .004D3 - .003D4 + .051D5 + .030D6 + .030D7 + .046D8 + .032D9\end{aligned} \quad \text{(A.2)}$$

Overall results appear as expected. Rates of uninsurance are higher among poorer individuals and among the unemployed.

Given the sample sizes, we have more confidence in our regional estimates and scaled the parish-level estimates so that the regional totals match those from the full report. This process of scaling the parish estimates to equal regional estimates is called raking the estimates and ensures consistency across reports.